

1. A method of fabricating a thermal management device, comprising the
2 steps of:
 - a) using a solid-state consolidation process to deposit a plurality of first material
4 layers exhibiting a relatively high degree of thermal conductivity; and
 - b) separating the first material layers with a different, second material having a
6 desired physical property.
2. The method of claim 1, wherein the desired physical property is a
2 relatively high coefficient of thermal expansion.
3. The method of claim 1, wherein the second material is air.
4. The method of claim 1, wherein the first material is copper.
5. The method of claim 1, wherein the first material is aluminum.
6. The method of claim 1, wherein the first material is in the form of a mesh
2 or screen.
7. The method of claim 1, wherein the second material is molybdenum.
8. The method of claim 1, wherein the second material is Kovar.
9. The method of claim 1, wherein the solid-state consolidation process is an
2 ultrasonic consolidation process.
10. The method of claim 1, wherein the solid-state consolidation process
2 includes electrical resistance consolidation.

11. The method of claim 1, wherein the solid-state consolidation process
2 includes frictional consolidation.

12. A thermal management device fabricated in accordance with the method
2 of claim 1.

13. A thermal management device fabricated in accordance with the method
2 of claim 2.

14. A thermal management device fabricated in accordance with the method
2 of claim 3.

15. A thermal management device fabricated in accordance with the method
2 of claim 4.

16. A thermal management device fabricated in accordance with the method
2 of claim 5.

17. A thermal management device fabricated in accordance with the method
2 of claim 6.

18. A thermal management device fabricated in accordance with the method
2 of claim 7.

19. A thermal management device fabricated in accordance with the method
2 of claim 8.

20. A thermal management device fabricated in accordance with the method
2 of claim 9.

21. A thermal management device fabricated in accordance with the method
2 of claim 10.
22. A thermal management device fabricated in accordance with the method
2 of claim 11.
23. The method of claim 1, wherein the material layers form a cooling
2 channel.
24. The method of claim 1, furthering including the addition of wicking
2 material.
25. The method of claim 1, furthering including the step of embedding a
2 sensor into the device.
26. The method of claim 1, furthering including the step of embedding a fan,
2 heat pump, or other active device to increase heat dissipation rate into the device.
27. The method of claim 1, wherein the material layers form a thermal bus.